IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA
CHARLESTON DIVISION

OHIO VALLEY ENVIRONMENTAL COALITION, INC., WEST VIRGINIA HIGHLANDS CONSERVANCY, INC. and SIERRA CLUB,

Plaintiffs,

v. **Case No. 2:13-cv-21588**

FOLA COAL COMPANY, LLC,

Defendant.

FOLA COAL COMPANY, LLC'S RESPONSE TO PLAINTIFFS' POST-TRIAL MEMORANDUM

I. INTRODUCTION

This case is a perfect example of what Congress sought to avoid in enacting the modern Clean Water Act in 1972—a detailed review by a federal court of a complex scientific issue that should be decided by rulemaking and NPDES permit development. But, the Court, having already decided to entertain Plaintiffs' claims, should now reject those claims as both unproven and contrary to the evidence.

Plaintiffs contend that the testimony of their three experts in stream ecology proves that Fola has violated the narrative water quality standard, which this Court has previously ruled is an "effluent standard or limitation" in Fola's three NPDES permits. *See* Pls.' Post-Trial Brief ("Pls.' Mem."), ECF 111 at 26-27. That such testimony is even necessary underscores that this action has converted the Clean Water Act citizen suit provision into

something it was never intended to be—a mechanism for collaterally attacking the sufficiency of permit limits on specific pollutants.[1]

Prior to 1972, federal water laws primarily relied on a system that broadly required dischargers to prevent violations of water quality standards rather than specific numeric limits on identifiable pollutants. In 1972, however, Congress fundamentally altered that scheme by adopting the modern Clean Water Act. This fundamental change "shifted the focus away from water quality standards to direct limitations on the discharge of pollutants." *See Piney Run Preservation Ass'n v. County Comm'rs of Carroll County, MD*, 268 F.3d 225, 264-66 (4th Cir. 2001). Since 1972, the water quality standards have served as goals and NPDES permits have been used to meet those goals through objective and simple to understand effluent limits. This case scraps that carefully-constructed program.

In 2008, when Fola's three NPDES permits were last renewed prior to the filing of this case, there were no effluent limits on either conductivity or its ionic components in any of the permits. Likewise, there was no peer-reviewed literature or an EPA Benchmark purporting to link conductivity to potential reductions in macroinvertebrate diversity. Plaintiffs' experts conceded this point. *See* discussion *infra*., ¶ II.B.3. Yet, the Court has allowed Plaintiffs to advance claims that conductivity—an "indicator" or "surrogate" which is neither a pollutant nor itself a direct "cause" of any particular effects—is responsible for violations of a "narrative" standard as measured by a test (the West Virginia Stream Condition Index or "WVSCI") that has never been approved as a water quality standard. Effectively, the Court has created a system by which the effluent limits to which dischargers are subject may effectively change during the life

[1] Plaintiffs know exactly how to challenge NPDES permits that do not contain effluent limits on conductivity, sulfate or total dissolved solids. They did so in an administrative appeal of an NPDES permit issued to a coal operator. *See Sierra Club v. Patriot Mining, Inc*., No. 13-0256, 2014 WL 2404299 (W.Va. 2014) (unpublished).

of a permit. And, they may change without any change in water quality standards, without a permit modification and without prior notice or comment—and thereby subject dischargers to civil and criminal penalties and to judicially-created remedies. Whether states should adopt water quality standards for conductivity and implement effluent limits to meet those standards are issues for states and EPA to work out. They are not issues that individual dischargers were intended to confront in enforcement actions.

Fola understands, however, that this Court has authorized Plaintiffs to bypass permit challenges and enforce water quality standards directly. And, Fola understands that the Court has already ruled in favor of Plaintiffs on the issue of "general causation."[2] However, beyond Plaintiffs reliance on the EPA Conductivity Benchmark and other "general causation" evidence, they conducted little analysis of site-specific conditions at Fola. They conflate evidence of general causation, such as the EPA Benchmark, with a site-specific analysis, and consider the issue of specific causation as settled by the Benchmark. They do not grapple with stressors that their own evidence proves are potential causes of impairment and rely on unsupported contentions of experts who spent little or no time examining relevant conditions on-site. As a result, the Court cannot reasonably rule in their favor.[3]

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[2] *See* Transcript Day 4 ("Tr. 4), p. 260. A "general cause" is an actor which can, in a specific instance, cause a specific effect, but is not itself proof that the actor did cause the effect in a specific instance. *Dittrich-Bigley v. Gen-Probe, Inc.*, No. 11-1762, 2013 WL 3974107, at *7 (D. Minn. July 31, 2013) ("Generally, causation is divided into two components: general and specific. General causation is whether X can cause Y. Specific causation is whether X did cause Y.") (emphasis in original).

[3] In a previous case, the Court denied a recusal motion by Fola. *Ohio Valley Environmental Coalition v. U.S. Army Corps of Engineers*, 2008 WL 4567829 (S. D. W.Va.2008). Fola, a subsidiary of CONSOL Energy ("Consol") remains concerned however that members of the Court's staff have had connections with groups that advocated against Consol or have expressed opinions on issues before the Court in this case.

According to publicly available electronic media, a clerk working on this case worked from February 2009 to July 2011 as the campaign organizer for the Center for Coalfield Justice ("CCJ") in western Pennsylvania. *See* Appendix A (Linked In statement). During that same period, the CCJ advocated against Consol over a longwall mining issue and in April 2011, intervened in an administrative proceeding adverse to the position of Consol. *See* Appendix B (CCJ webpage materials).

II. ARGUMENT

A. Plaintiffs' Claims Concerning Discharges from Fola's 4A Mine Into the Right Fork Watershed are Inadequate

1. Plaintiffs' Claims Concerning Right Fork Did Not Survive Fola's Motion for a Directed Verdict

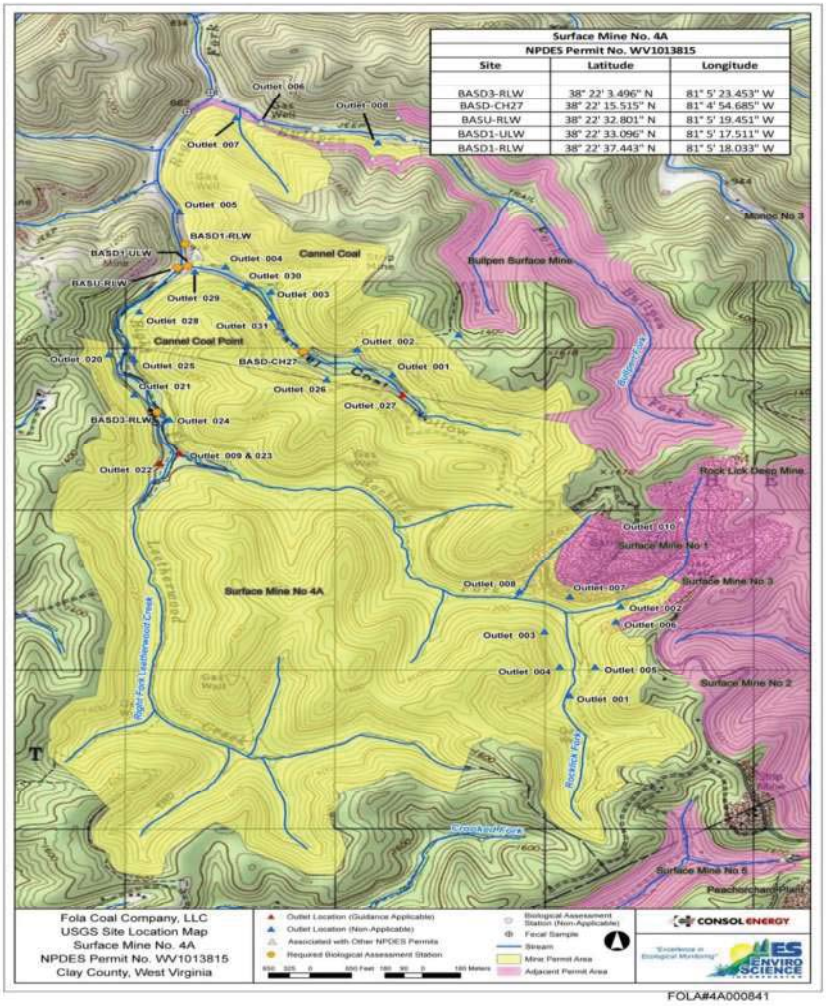
The Sierra Club argued that discharge points or "outlets" in three different watersheds are violating three separate permits. Fola's NPDES Permit No. WV1013815 authorizes discharges from four outlets (022, 023, 025 and 027) alleged by the Complaint to be causing violations of the narrative water quality standard in Right Fork of Leatherwood Creek. ECF 1 at 11-12.

Photographs, apparently posted to a Facebook page by the same clerk depict anti-coal activism alongside commentary stating: "CCJ Low-Impact Coal: no mountains or communities were harmed in the mining of this coal." Appendix C. According to materials posed by the "Allegheny Group" of the Sierra Club (a party in this case) in December 2010, she was elected to serve a two year term on the Group's executive committee. Appendix D. In a "special report" authored for the Pennsylvania Chapter of the Sierra Club early in 2011, she stated, "today seems like a great day to accelerate our transition away from dependence on [coal]. Yesterday would have been better, but beggars can't be choosers, so I'll take what I can get." In a 2008 interview with the Appalachian Independent, she stated that she "personally [has] a lot of problems with coal as an energy source." *See* App. E, p. 16, last ¶ (2 of 2 pages).

On December 14, 2009, the Pennsylvania Environmental Quality Board conducted a public hearing on proposed rules establishing effluent limits for new or expanded sources of total dissolved solids, chlorides and sulfate. *See* App. F, pp. 4-5 (transcript of hearing). The same clerk spoke in that hearing on behalf of CCJ. *Id*. pp. 41-45. Her comments included a discussion of released of high TDS water into Dunkard Creek, ad incident that involved an underground mine then owned by a Consol subsidiary. Then, she commented that: [i]f recent pollution….. from…. Dunkard Creek [this] demonstrated anything, it is that the existing allowances are already beyond the capabilities for assimilation by the region. We are well beyond safety levels for TDS, sulfates, and chlorides and it is clear responsibility of the Department of Environmental Protection to take action on this matter." *Id*. pp. 44-45.

In a twitter account appearing to belong to the same person are numerous anti-coal references; including an extension of thanks to EPA for taking steps to end mountaintop mining; CCJ's advocacy against Consol; and claims that "poverty and tyranny [are] central to [the] immoral practice of mountain destruction…" *See* Appendix F (various "tweets" assembled). In a newspaper article dated February 25, 2010, she was identified as a representative of "the Pennsylvania Alliance for a Coal-Free Future." In response to a question about the advisability of using carbon capture and sequestration to control carbon dioxide emissions for coal-fired electric generation, she reportedly said "[w]e're going to see more destructive mining, probably. It's just such a false solution." App. G, p.2, last ¶. Finally, in 2010, in an article for the Sierra Club reflecting on a public hearing on a coal refuse permit sought by Consol, she stated: "[t]aking my own case as an example, I am an advocate for coal industry reform no matter what my vocation happens to be." Appendix H.

As shown below on Plaintiffs' Exhibit ("PEX") 42 (p. PE122), a map prepared by Dr. Palmer, Outlets 022, 023 and 025[4] are in the Right Fork watershed, and Outlet 027 is in Cannel Coal Hollow of Right Fork. Transcript Day 2, ("Tr. 2"), pp. 197-98 (Palmer).



Each outlet is in the uppermost regions of the watershed. The Sierra Club, however, elected to conduct benthic sampling in Right Fork below its confluence with Cannel Coal Hollow. *Id.*; Tr. 3, pp. 34-35 (Swan). Between these outlets and the location Dr. Swan chose as his compliance measuring point, however, there are as many as twelve additional outlets. Tr. 2, pp. 198-99

[4] Plaintiffs did not present any testimony concerning Outlet 025. In response to Fola's motion for a directed verdict, Plaintiffs' counsel conceded they were dropping their claims as to this outlet. Transcript Day 3, ("Tr. 3") Tr. 3, p. 204.

(Palmer listing additional outlets). As a result, Plaintiffs' expert conceded that their compliance monitoring point did not isolate the effects of Outlets 022, 023 and 027. *Id.,* 199 (Palmer).

Based on Plaintiffs' inability to isolate and thereby define the contribution of these individual outlets, Fola moved for a directed verdict at the end of Plaintiffs' case in chief. Tr. 3, pp. 202-03. In response, the Sierra Club cited no evidence. Instead, it suggested that its burden to prove that any discharge is a "material contribution" of impairment is nearly non-existent. Tr. 3, p. 203. In their brief, Plaintiffs cite Defendant's Exhibit 198 for the proposition that the combined flows from the three outlets comprise some one-eighth of the downstream flow and thereby must be a material contributor to impairment "regardless" what contributions of conductivity arrive via the outlets accounting for the other seven-eighths of the flow. Pls.' Mem. at 7 n.3. But that conclusion is sheer speculation by Plaintiffs' lawyers, unadorned by any testimony or scientific support. It simply cannot support a finding that each or any of the three outlets has caused any particular effect on WVSCI scores. *Caufield v. EMC Mortgage Corp.*, 803 F. Supp. 2d 519, 528 (S.D. W.Va. 2011) (mere speculation and conjecture do not satisfy the preponderance of evidence burden). Moreover, the evidence on which Plaintiffs rely does not support their factual contentions.[5]

2. Plaintiffs' Utterly Failed to Address a Clear, Obvious and Admitted Potential Alternative Cause in Right Fork

Plaintiffs' own experts conceded that selenium is a potential source of stress to aquatic organisms based on its ability to affect the food chain. Tr. 2, pp. 199-200 (Palmer) & 217

[5] Likewise, Plaintiffs inappropriately aggregate the flows from the three outlets without identifying the effect of each individually. And, their assertion about flows in Right Fork are taken from an exhibit introduced by Fola solely to impeach Dr. Swan as to his evaluations of sediment and metals precipitation in Right Fork. Tr. 3, pp. 64-65 (Swan). That document was not introduced to support any assertion about flows. *Id*. Nor do Plaintiffs even attempt to claim that the ratio of discharge flow to stream flow was developed using data derived during similar times or similar flow conditions. And, finally, they assume a linear relationship between conductivity and impacts for insects that is unsupported by any testimony. In short, their explanation is nothing more than creative, but scientifically unsupported, backfilling for an unforeseen gap in their evidence.

(Palmer noting that Pond 2008 found a strong correlation between mayfly richness and selenium). The chronic and acute water quality criteria to protect aquatic life from selenium are, respectively, 5 and 20 parts per billion (ppb). The Sierra Club previously sued Fola for repeatedly violating both the chronic and acute selenium standards in both Right Fork and Cannel Coal Hollow as a result of discharges from Outlets 022, 023 and 027. Tr. 2, pp. 204-05; DEX 194. Dr. Palmer was completely unaware of these critical facts and did no work to examine the food chain effects of selenium. Tr. 2, pp. 200, 202-08.

Likewise, Dr. Palmer conceded that WVDEP has identified Cannel Coal Hollow as biologically impaired based on selenium concentrations—not based on conductivity. Tr. 2, pp. 201-02 (discussing JE 20, WVDEP's 303(d) list of impaired streams). She was ignorant of that fact prior to testifying. *Id.* 202. Having conceded that selenium is a potential cause of impairment and that it was present in concentrations exceeding water quality standards designed to protect aquatic life, Dr. Palmer's failure to explain or even to consider the potential role of selenium is fatal to Plaintiffs' claims that conductivity is the cause of impairment in Right Fork and Cannel Coal Hollow. *See Heller v. Shaw Indus., Inc.*, 167 F.3d 146, 156 (3d Cir. 1999) (expert's failure to rule out plausible alternatives as sole cases is fatal to specific causation analysis); *see also Rimbert v. Eli Lilly & Co., No. CIV 06-0874 JCH/LFG*, 2009 WL 2208570, at *20 (D.N.M. 2009) *aff'd*, 647 F.3d 1247 (10th Cir. 2011) (specific causation methodology fatally flawed where expert failed to provide objective reasons for eliminating alternative explanation because "[a] methodology that inexplicably ignores material facts and relies only on selective evidence does not lead to a reliable opinion"); *Nelson v. Tennessee Gas Pipeline Co.*, 1998 WL 1297690, at *4 (W.D. Tenn. 1998) *aff'd*, 243 F.3d 244 (6th Cir. 2001) (failure to examine confounding factors was fatal flaw resulting

in exclusion of proffered testimony of plaintiffs' expert opining that, more probably than not, plaintiffs suffered from brain disorders due to PCB exposure from defendants' facility).

B. Plaintiffs Misunderstand the Concept of Specific Causation

Plaintiffs have a misplaced view of specific causation. Essentially, they believe that proving specific causation is as simple as showing that a factor which can cause impairment (a so-called "general cause") is present at a specific site. Of course, that is not the case. Ecologists recognize that there are many factors that may impair a stream. Determining which factors are material is the stuff of scientific investigation, not assumption. Take, for example, EPA's investigation of specific causation in the Clear Fork Watershed, which was discussed at trial. DE 201. EPA diagrammed its causal investigation as follows:

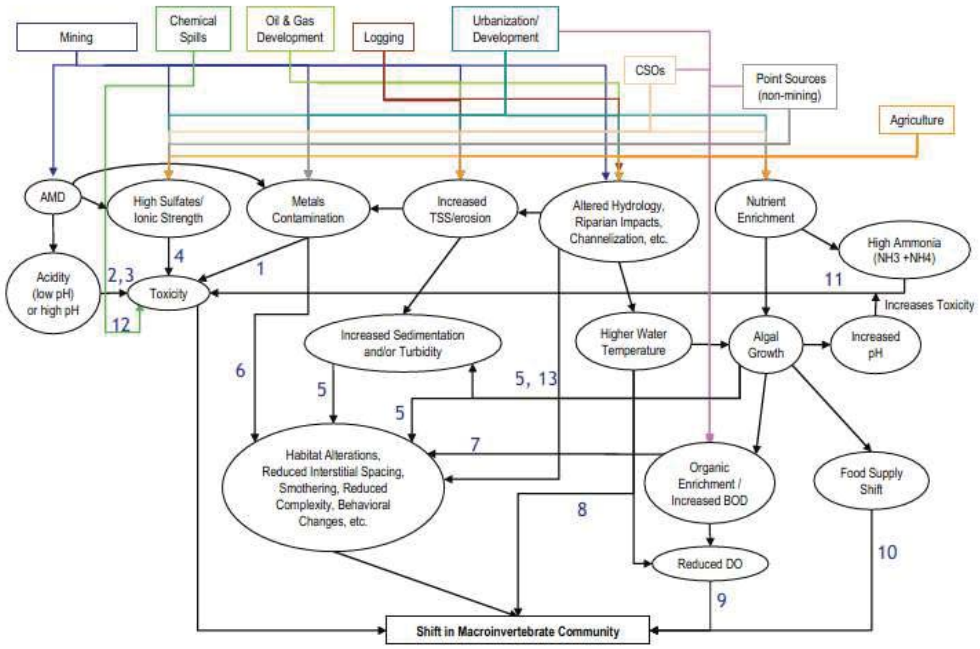


FIGURE 5

Conceptual Model of Sources and Stressors in the Coal River Watershed, WV. Potential sources are listed in top-most rectangles. Potential stressors and interactions are in ovals. Candidate causes are numbered (1) through (13) (see numbered list in Section 2.2). Note that some causes have more than one stressor or more than one associated step.

DEX 201 at 12.

Rather than investigate candidate causes to determine which ones were material causes of impairment at Cogar Hollow, Right Fork and Road Fork, Plaintiffs simply assumed conductivity was the primary cause without even measuring the other potential causes in any scientific way. The faults in their approach are discussed below.

1. Temporality

Plaintiffs place great weight on the fact that impairment occurred after mining commenced and conductivity increased. ECF111 at 10, 18. While this fact may be compelling without further thought, it does little to answer the question of specific causation in this case. After mining commenced, several things changed. Trees were cut down. Water temperatures increased. Hydroxides formed on the stream bottoms. The streams were modified to include ponds, which both changed the flow of the streams and introduced different aquatic species. And, the headwaters above the ponds were eliminated. As discussed below, *all* of these modifications can lead to impairment and there is a temporal relationship between impairment and *each* of these candidate causes. Plaintiffs' suggestion that the temporal relationship between increased conductivity and impairment is somehow unique or meaningful is entirely misplaced. That relationship provides absolutely no evidence of specific causation.

2. WVSCI and the EPA Benchmark

The Plaintiffs place great weight on the EPA Benchmark as evidence of causation. However, it is important to understand what the EPA Benchmark does and does not do. According to EPA, the "aquatic life benchmark for conductivity is expected to avoid the local extirpation of 95% of native species (based on the 5th centile of the [species sensitivity distribution]) due to neutral to alkaline effluents containing a mixture of dissolved ions

dominated by salts of SO_4^{2-} and HCO_3." JE 17 at xiv. It is a prophylactic standard—EPA set the aquatic life benchmark for conductivity at 300 µs/cm to accomplish the goal of preserving 95% of local species. The Benchmark, however, was *not* designed to prevent failing WVSCI scores, and no one has testified that meeting the conductivity benchmark is necessary to obtain a passing WVSCI score. That is a different issue entirely. As Plaintiffs' expert, Dr. Matthew Baker, conceded, you can achieve a passing WVSCI score without preserving the most sensitive aquatic species. Tr. 4, p. 251.

Indeed, no causal analysis has been performed by EPA to determine what conductivity level would cause a failing WVSCI score. As Plaintiffs like to point out, EPA did perform a regression analysis indicating that WVSCI scores are failing more often than not (.59 probability) when conductivity is at 300 µs/cm. JE 17 at A-36. However, this is not a causal analysis; it is simply an observation of historic data. It does not isolate the effects of conductivity from other effects that might co-occur with conductivity, such as increased temperature or poor habitat. And, notably, the same type of analysis can be done with other stressors. As explained below, Dr. Menzie demonstrated that the historic data show that one would expect failing WVSCI scores based solely on either the temperatures or the sediment levels found in all three streams at issue in this case. *See discussion, infra;* Tr. 4, pp. 20-22.

In summary, the EPA Benchmark answers a different question than the one presented to this Court. The EPA Benchmark tells us that conductivity levels of 300 µs/cm or less will preserve 95% of native species. It does not tell us what conductivity levels cause failing WVSCI scores or what unit of conductivity can result in what reduction of WVSCI scores. In fact, after three trials, Plaintiffs' experts have never offered these numbers.

3. The Plaintiffs' Marginal Investigation

Because several potential stressors are present in Road Fork, Right Fork and Cogar Hollow, it is critical that a scientific investigation be undertaken to determine which stressor or stressors are material causes of impairment. Plaintiffs did not do that.

Plaintiffs dispatched Dr. Swan to the three watersheds to conduct macroinvertebrate sampling and to evaluate stream habitat using a "rapid bioassessment protocol" ("RBP"). Beyond this data-gathering exercise, he did little. He conceded that there were stressors to aquatic life not captured in his RBP Habitat review, such as the intrusion of "quicksand" or silt in Road Fork, and the presence of aluminum precipitates in Right Fork. Tr. 3, pp. 59, 67. He likewise conceded that his RBP analysis was limited by the forms he used—he evaluated embeddedness only in riffles and runs, and sedimentation only in pools because that is the information called for in the forms. *Id*. 41, 46. In Road Fork and Cogar Hollow, he examined only the 100-meter reach immediately below the in-stream ponds constructed to control flow from valley fills in the headwater areas. Likewise, in Right Fork, he also examined only a 100-meter reach of stream at a location downstream of the confluence between Right Fork and Cannel Coal Hollow. *Id*. 52-53. There, for example, he evaluated the sediment score to be 20. *Id*. 63. He admitted on cross that WVDEP obtained very different results farther downstream, but conceded he had never reviewed those results or visited the area. *Id*. 63-64.

Perhaps most importantly, though, Dr. Swan rated the accumulation of iron and manganese precipitants on the stream bottom (where benthic macroinvertebrates reproduce and live) as "high"—a factor largely unaccounted for in his RBP scoring. *Id*. 58, 67-69. But Dr. Swan, who spent more time on-site than did Plaintiffs' remaining two experts combined, offered no opinion about the cause(s) of the WVSCI scores he computed or about the effects of the

"high" degree of metals precipitation or the benthic habitat. Nor did he offer any meaningful photographs—all of his photographs were taken at such distance that they provided no meaningful information. *Id*. 67-69.

Likewise, Plaintiffs cannot demonstrate specific causation through the testimony of Dr. Matthew Baker. Indeed, Dr. Baker did not even rebut the testimony of Dr. Menzie on specific causation issues. The Court prohibited him from doing so after Plaintiffs' violated the Court's sequestration order for the second time. Tr. 4, pp. 189. While Dr. Baker did testify during the Plaintiffs' case-in-chief, he offered very little evidence on the topic of specific causation, especially when compared to the examination conducted by Dr. Menzie.

Dr. Baker's site visit marked the first time he had ever been to a mine site. Tr. 3, p. 173 (Baker). He did little to commemorate the occasion. Unlike Dr. Menzie, Dr. Baker did not assess the stream through the use of the Rapid Bioassessment Protocol (RBP). *Id*. He took photographs, but did not include them in his expert report or share them with the Court. *Id*. 173-174. He believes that manganese and iron hydroxides are potential stressors. *Id*. 169. However, unlike Dr. Menzie—who gathered samples of the hydroxides and compared the substrate of the mined sites to reference streams—Dr. Baker took no samples or measurements of the substrate.

Dr. Baker's expert report cited to a causal analysis prepared by EPA on the Clear Fork watershed in West Virginia, which he described as "competent." *Id*. 169-170. He ignored the findings of that study, however.[6] Notably, EPA found in that study that there are "substantial effects thresholds" for various stressors, including embeddedness and sediment. *Id*. 171-172. Dr. Baker acknowledged that EPA found substantial effects thresholds at RBP values "less than

[6] Previously, this Court held similar scientific opinions inadmissible. *See Tyree v. Boston Scientific Corp.*, 54 F. Supp. 3d 501, 520 (S.D. W.Va. 2014), as amended (Oct. 29, 2014) (excluding an expert's opinion as unreliable because the expert ignored peer-reviewed literature opposing the expert's opinion without explaining a scientific basis for doing so).

9" for embeddedness and "less than 8" for sediment. *Id*. 172-173. However, despite the fact that Dr. Swan and Dr. Menzie both found scores in various locations exceeding these thresholds, Dr. Baker conducted no detailed analysis of embeddedness or sediment. Instead, he simply made the unscientific observation that embeddedness was "patchy" and strangely dismissed the EPA's thresholds for embeddedness and sediment as "kind of noisy, much like the evidence for the benchmark at 300 [microsiemens or conductivity] being kind of noisy for predicting impairment." *Id*. 158 and 194. He did not even attempt to grapple with the undisputed findings of Drs. Swan and Menzie that there were high concentration of metal hydroxides throughout the stream reaches they assessed.

Even if sediment and embeddedness problems were merely "patchy," as Dr. Baker claimed, there was no quantifiable evidence that hydroxide-induced embeddedness was insufficient to serve as the primary cause of impairment. Nor is it clear how aquatic insects would find their way to the patches of acceptable habitat. Dr. Baker opined that aquatic insects reach stream habitats by flying there, by moving upstream or by drifting downstream. *Id*. 179. Unlike Dr. Menzie, though, Dr. Baker did not examine upstream or downstream conditions to determine if there were suitable habitats from which insects could drift, swim or fly.[7]

Although Dr. Baker recognized that the species that reside in ponds may be different than those that reside in streams, he conceded that neither he nor Dr. Swan sampled the ponds. *Id*. 181. Dr. Menzie, by contrast, sampled the ponds and found species different than those that would normally inhabit a reference stream. Tr. 4, pp. 44-46 (Menzie).

[7] *See OVEC v. U.S. Army Corps of Engineers*, 479 F. Supp. 2d 607, 649 n.68 (S.D. W.Va. 2006), *rev'd* on other grounds 556 F.3d 177 (4th Cir. 2009) (Dr. Palmer questioned whether insects could fly into areas near sediment ponds to populate streams given the "immense clearing and land change occurring during construction of valley fills….").

Similarly, Dr. Baker conceded that ponds would reduce the ability of mayflies to migrate downstream, Tr. 3, p. 182 (Baker), and conceded that the lack of headwaters upstream of the ponds would reduce the ability of upstream headwaters to contribute a substantial amount of invertebrate taxa downstream. *Id*., 183. Notably, EPA reached a similar conclusion in the Benchmark, finding:

> *B.4.9. Lack of Headwaters*
>
> *The loss of headwaters due to mining and valley fill eliminates a source of recolonization for downstream reaches. Hypothetically, this could result in extirpation of invertebrates if the sampled sites are sink habitats that must be recolonized by headwater source habitats. This is plausible in stream reaches immediately below valley fills. However, where there are other headwaters on tributaries above the sampling site, they serve as alternative sources for recolonization. No regional data are available to address this issue.*

JE17 at B-22 (underlining supplied). Here, the stream reaches at issues are "immediately below valley fills" and, therefore, the loss of headwaters is a potential problem in EPA's view. Dr. Baker, however, never measured the effect of the ponds or the loss of headwaters.

Similarly, unlike Dr. Menzie, Dr. Baker did not examine conditions downstream. While Dr. Menzie's investigation noted poor habitat downstream, Dr. Baker conceded that he "did not go much further downstream than [Dr. Swan's] sampling reaches." Tr. 3, p. 183. He also acknowledged that at least one WVDEP assessment in Right Fork found downstream sediment and embeddedness levels so poor that EPA would expect substantial stress. *Id*. 185-186. None of this was accounted for in Dr. Baker's analysis, however.

Dr. Baker did make some site-specific observations regarding the composition of aquatic insects at the sites, but his observations are not as compelling as Plaintiffs claim. For instance, Plaintiffs claim that Dr. Baker found an "increase in the abundance of taxa known to be

tolerant" of conductivity. ECF 111 at 15. This is false. Dr. Baker merely found that the *proportion* of conductivity-tolerant insects increased following mining. PEX 65. By contrast, the total *abundance* of insects—including conductivity-tolerant insects—dramatically *decreased* following mining. For example, Potesta & Associates conducted a biological survey in 1999 near Dr. Swan's Right Fork sampling location and found a total of 1,488 aquatic insects in Right Fork. *See* PEX 72, pp. PE0217, PE0223-PE0225. In 2014, after mining, Dr. Swan found only 195 insects. PEX 25. Plainly, only the poor habitat conditions in the streams could explain such a decline in the *abundance* of all insects, including those tolerant to conductivity. Indeed, Dr. Menzie noted that the ponds—which were high in conductivity—contained mayflies. Tr. 4, pp. 46-47. Dr. Baker never explained why the conductivity-tolerant insects declined in abundance or how mayflies were able to live in the high-conductivity ponds, but not in the precipitant-laden streams below the ponds.[8]

Because Dr. Baker gathered no scientific evidence from his first ever visit to a mine site—no photographs, no measurements, no samples—he was left to explain his theory of specific causation through the use of "causal diagrams" that he drew on a whiteboard at trial. No record of those diagrams exists today, but Dr. Baker described the approach as one he borrowed from the fields of computer science and artificial intelligence. Tr. 3, p. 186-187 (Baker). He conceded that the technique had not been "used extensively in published literature" for ecology, *Id*. 187, but believes that "everyone will be doing this soon." *Id*. 188. Although he conceded that "this type of analysis has not gone through any type of peer review," he does plan to write a

[8] Similarly, Dr. Baker noted a high *proportion* of "clinger" taxa and suggested this was proof that sedimentation was not a problem. Again, however, by cleverly focusing on the proportion of "clinger" taxa, Plaintiffs avoid addressing the paltry *abundance* of all insects, including clingers. Dr. Menzie, however, explained that he was not surprised that a few clingers were able to "eke out a living" on rock surfaces that were not completely buried with precipitates. Tr. 4, p. 37 (Menzie). Put simply, having a high proportion of a small number is not compelling evidence of anything.

"short letter" to a journal describing the analysis. *Id*. 189. For now, however, the analysis is not one accepted by the scientific community at large and is severely lacking in its ability to establish conductivity as the specific cause of impairment at these sites. *See United States v. Crisp*, 324 F.3d 261, 266 (4th Cir. 2003) (the factors guiding the overall relevance and reliability determinations that apply to all expert evidence include: (1) whether the particular scientific theory "can be (and has been) tested"; (2) whether the theory "has been subjected to peer review and publication"; (3) the "known or potential rate of error"; (4) the "existence and maintenance of standards controlling the technique's operation"; and (5) whether the technique has achieved "general acceptance" in the relevant scientific or expert community) (quoting *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 593-594 (1993)). Only Dr. Menzie has conducted a competent analysis of specific causation.

And, lastly, Plaintiffs offered the testimony of Dr. Palmer. When it worked to support her role as a mouthpiece for anti-mining forces, she testified before Congress that mining itself, apart from its influence on water quality, unqualifiedly causes irreversible changes to aquatic populations and that those changes will persist indefinitely regardless of water quality. Tr. 3, pp. 3-5 (Palmer). Indeed, she testified that these changes can cause impairment as measured by the WVSCI even if they do not extirpate particular species. *Id*. 5. But, in this and other NPDES permit enforcement cases, she has blamed water quality—namely conductivity—as the primary or sole cause of impairment to the exclusion of forest reduction and flow modification. Her conclusions are largely unsupported.

Dr. Palmer is not a toxicologist; or a chemist; or an epidemiologist; or statistician. Tr. 2, pp. 209-210 (Palmer). She received her Ph.D. in oceanography. *Id*. 209. She has done no field or lab testing to validate or invalidate the EPA Benchmark. *Id.* She has done no

investigative work on the toxicity of alkaline mine drainage to aquatic insects at all. *Id.* She has done no work to verify or rework the statistical analyses of the EPA Benchmark and has done no work to identify the individual ionic constituents of conductivity that might be responsible for changes to insect populations even though EPA's Science Advisory Board suggested that work was necessary to identifying a pollutant with a link to effects on insects. *Id*. 210.

Dr. Palmer acknowledged that when Fola's NPDES permits were renewed in 2008 and for a significant time thereafter, the peer-reviewed literature did not assert a general causal connection between conductivity and WVSCI scores or particular impacts to the insects used in WVSCI scoring. *Id*. 211-15 (nothing in Pond 2008, JE 13, claimed that conductivity or sulfate cause any particular effects; study was "too early"); 216 (nothing in Pond 2010, PEX 131, asserted that conductivity or any particular ion affects macroinvertebrates—emphasis was on mining); 224-25 (nothing in Pond 2012, PEX 137, found a causal connection between conductivity and macroinvertebrates); 217-18 (nothing in Pond 2014, PEX 141, asserts a causal connection between conductivity and macroinvertebrates). Likewise, she conceded that this same literature: found strong correlations between WVSCI scores and RBP habitat scores (Tr. 2, p. 212) and between habitat indicators (chiefly sedimentation and embeddedness) and multi-metric indices like the WVSCI (*Id*. 213); found a strong correlation between mayfly abundance or richness and selenium (*Id*. 212); found a strong correlation between percent forest and biological indicators (*Id*. 218-19); and found that macroinvertebrate sampling sites below 4 of 16 sites affected by older valley fills likely yielded a passing WVSCI score despite elevated conductivity (*Id*. 220-21, discussing Pond 2014, PEX 141).

Dr. Palmer conceded that most toxicologists find conductivity to be too coarse a measure, and thus an unreliable predictor, of toxicity (*Id*. 221-222, concerning Pond 2014, PEX

141). Dr. Palmer also noted that peer-reviewed literature concedes that "elevated specific conductance might simply be an indicator of mining disturbance and [that] other mining related variables might be causing or contributing to the impairment." Tr. 2, p. 214. Likewise, she conceded those studies neither addressed nor ruled out "possible exposure to metals via dietary intake or microhabitat smothering by metal hydroxide precipitate." *Id.* And, as a consequence of these complexities, she acknowledged that EPA has approved WVDEP's decision to delay development of total maximum daily loads ("TMDLs")[9] in streams identified as impaired as a result of ionic toxicity until the causative ions and their impairment thresholds are identified. Tr. 2, p. 223 & DEX 196 (EPA's 2012 Decision Rationale). This includes Leatherwood Creek, Right Fork of Leatherwood Creek, and Road Fork of Leatherwood Creek. JE 20 at pp. JE1607-JE1608 (2012 WVDEP 303(d) list including the aforementioned streams as biologically impaired with a projected TMDL to be determined).

In the face of admitted evidence that many different stressors can cause changes to macroinvertebrates populations, what did Dr. Palmer do to assess what could cause impairment in the three Fola watersheds? Very little. She did not conduct any water sampling or temperature analysis; she did not examine the substrate; she did not examine the ponds or their spillways; she did not examine the upland clearing and mining activities. Tr. 2, pp. 200-204. Indeed, she had no idea even where Dr. Swan had taken the benthic samples plaintiffs relied upon to prove "impairment." Tr. 2, p. 198.

In fact, Dr. Palmer did not visit the sites at all. *Id*. 199-201. Her decision to offer opinions without doing so stands in stark contrast to the comments of her fellow experts: Dr.

[9] TMDLs are a sort of "pollution diet" required by Section 303(d) of the CWA in streams identified as not achieving their designated use as a result of some pollutant. *See Ohio River Valley Envtl. Coal., Inc. v. Callaghan*, 133 F. Supp. 2d 442, 445 (S.D. W.Va. 2001).

Swan noted that RBP forms offer "a pretty good description, but… visiting the site is best." Tr. 2, p. 73. Dr. Baker opined that it would have been "impossible" to reach firm conclusions before a site visit. Tr. 2, p. 94.

Despite Dr. Swan's admonition that "visiting the site is best," Dr. Palmer discounted habitat as influencing WVSCI scores based solely on the RBP habitat scores compiled by Dr. Swan. *See* Tr. 2, pp. 161-62 (Road Fork); 172 & 184-85 (Right Fork) & 194-95 (Cogar Hollow). But Plaintiffs and their experts rejected RBP scores as accurate measure of stream habitat. Tr. 3, p. 159 (Baker: "I don't think [RBP is] a very effective measures of stream habitat"); *see* also Tr. 4, p 125 (Menzie agreeing with Plaintiffs' Counsel that RBP scores are only rough estimates). RBP forms were not designed to capture the effects of metal hydroxide precipitates on benthic habitat. Tr. 4, pp.18-19 (Menzie). Indeed, WVDEP has devised special forms that account for the effects of metal hydroxide precipitates or benthic habitat separate and apart from the conventional RBP habitat scoring. *See* PEX 30 (pp. PE0056 & PE0058). On these separate forms, Plaintiffs' expert, Dr. Swan, recorded his observations of a "high" degree of metal hydroxide (iron or manganese) precipitates in each of the three 100 meter stream reaches he assessed. Yet, there is no evidence that Dr. Palmer reviewed any meaningful photographs of these heavy precipitates. In short, her assessment made absolutely no accounting for them.

4. Dr. Menzie's Thorough Investigation

In contrast, Dr. Charles Menzie, Fola's expert, conducted a detailed and methodical causal assessment using generally accepted principles of casual analysis. Dr. Menzie, who has three degrees in biology, is an expert in risk assessment and aquatic ecology. Tr. 3, pp. 205-211 (Menzie). He offered first that the EPA Benchmark is of limited utility because it did not adequately consider the effects of potential confounding factors—known

stressors that could interfere with the relationship EPA posited between conductivity and the presence or absence of aquatic insects. Among the stressors inadequately discounted by the Benchmark are habitat as measured by the RBP and temperature (*Id*. 213-215: the quality of RBP scores is inadequate and EPA failed to organize temperature data in a meaningful way); selenium (Tr. 4, p. 232; because existing selenium data are poor, the occurrence of selenium in central Appalachian streams should be investigated further); the loss of upstream insect recruitment areas by valley fill and pond construction (Tr. 4, pp. 48-50: EPA presumed presence of "intervening" unaffected "feeder streams" between regulated outlet and sample location which are absent here); and metal hydroxide precipitates (Tr. 4, pp. 13-15: EPA presumed no metal hydroxide precipitates in streams with alkaline, as opposed to acid, based drainage).

Dr. Menzie then detailed the stages of his causal assessment: a problem statement; the compilation of a list of candidate causes based on existing knowledge; development of a conceptual model of plausible causal connections; analysis of available evidence to support or reflect those relationships; identification of potential cause and filling gaps with additional studies or research. Tr. 3, pp. 218-220; DEX 100 (diagram of causal analysis process). Here, he identified the problem as identifying the cause of depressed WVSCI scores.

To identify candidate causes, Dr. Menzie started with the development of the WVSCI—the measure of compliance previously recognized by the Court. Tr. 3, pp. 216-218. The WVSCI relies on the makeup of insect populations in undisturbed "reference" streams to identify "allowable" conditions. The reference streams used to develop the WVSCI were generally in forested watersheds with little disturbances and generally marked by much cooler temperature in the summer. They are also marked by low conductivity and by the absence of both ponds and metal hydroxide precipitates. *Id*. 216-218, 220-221; Tr. 4, pp. 51-52.

Any alteration from the conditions in these reference stream watersheds can reduce WVSCI scores and thereby qualify as a "candidate cause." Tr. 3, pp. 217-218, 221 (Menzie). Here, because all of these characteristics have been altered in the three watersheds at issue (Road Fork, Right Fork, and Cogar Hollow), Dr. Menzie considered all of them to be "candidate causes" of impairment because all of them co-occurred in time and space with changes in WVSCI scores. Tr. 3, p. 222, 225-226.[10]

Dr. Menzie then prepared a conceptual model of how five identified candidate causes might affect aquatic communities in the Leatherwood watershed.[11] DEX 101; Tr. 3, pp. 222-224. For each candidate causes he examined peer reviewed literature and other information on its potential to affect aquatic insect populations. For example, extensive literature identifies forest reduction and landscape alteration as a cause of changes in macroinvertebrate assemblages. Tr. 3, pp. 226-231; DEX 16 (Cuffney, et. al) DEX 102 (aerial photo showing changes in forest and landscape in all three watersheds). Likewise, he considered the potential role of elevated levels of dissolved ions. Tr. 3, pp. 231-240; DEX 135 (Menzie review of general toxicity information). He determined that the conductivity toxicity testing on mayflies and sensitive insects used in the WVSCI is limited because few of the species lend themselves to repeatable tests. Tr. 3, pp. 233-235. As a consequence, there is substantial variability in the ranges of conductivity that show toxic effects to the insects that have been tested. *Id.* 233. He

[10] Plaintiffs' claim that "[a] temporal relationship between exposure and resulting harm is strong evidence of specific causation." Pls.' Mem. at 18 (citing *Westberry v. Gislaved Gummi AB*, 178 F.3d 257, 265 (4th Cir. 1999). They claim that this principle supports a claim that conductivity is a specific cause of impairment. *Id.* But that principle does not work here because all of the potential stressors—deforestation, temperature changes, loss of headwater areas, flow alteration, selenium and habitat impacts from metal precipitates—are temporally connected to mining or related activities. *See, e.g.,* Tr. 2, pp. 218-19 (Palmer: difficult to separate effects of mining, deforestation, etc. on bioindicators); Tr. 3, pp. 225 (Menzie). The temporal aspects of changes in WVSCI scores thus do nothing to discern which among many potential stressors is or is not a material cause of impairment.

[11] The five identified candidate causes were: reduction in forested watershed; increased ionic pollution; formation of metal precipitates on benthic habitat; loss of upstream recruitment areas; and warmer summer temperatures. Tr. 3, pp. 224-225.

also reviewed the results of "whole effluent toxicity testing" of Outlet 001 in Road Fork. Tr. 3, pp. 236-237 & Tr. 4, pp. 3-5. Fola's discharges from that outlet have repeatedly passed the "acute" toxicity standard for lethal effects. Tr. 3, p. 237. Likewise, Fola is consistently passing "chronic" toxicity tests for sub-lethal effects. Tr. 4, pp. 3-5.[12]

Dr. Menzie next reviewed the peer reviewed literature on the effects of manganese and iron hydroxide precipitates—the same types of precipitates that Plaintiffs' expert (Dr. Swan) described as "high" throughout all three stream reaches he assessed. Tr. 4, pp. 5-13; DEX 75 (McKnight et. al) and DEX 184 (Vuori et al). These precipitates result from the oxidation of dissolved metals in the water. Tr. 4, pp. 5-7 & DEX 103 (conceptual model of water movement through treatment systems). They can both encrust rocks and create "embeddedness" in benthic habitat on the one hand and create flocculants which deposit like sediment on stream bottoms on the other. Both manifestations adversely affect aquatic insects. Tr. 4, pp. 7-9. Peer reviewed literature reveals that in a mining context "metal precipitation covering the streambed may have a more deleterious effect on stream communities than high metal-ion activities." Tr. 4, p. 11 (quoting McKnight, et al, DEX 75). The literature also shows that while deposition of the flocculants can smother macroinvertebrates, hydroxide coatings on rocks can significantly decrease species types and abundance by disrupting food resources and destabilizing substrate. Tr. 4, pp. 11-13 & DEX 184 (Vuori et al.).

[12] In January 2014, as part of a permit renewal WVDEP modified Fola's NPDES Permit No. WV1013840 for the Road Fork Mine to require WET testing. *See* Appendix K (January 17, 2014 reissuance). The permit condition in place to address the potential effects of ionic pollution requires that Fola conduct quarterly chronic toxicity testing on the effluent from Outlet 001. *Id*. 29. If chronic effluent toxicity exceeds the 1.0 chronic toxicity units (TUc) trigger value, Fola shall immediately resample and test the effluent for the outfall. *Id*. If the second test yields results equal to or less than 1.0 TUc, testing shall continue quarterly. *Id*. If the second test shows an exceedance of the trigger value, however, Fola must submit an AMP within 60 days identifying actions it will take to achieve compliance with the WET triggers along with a permit modification placing WET limits in the permit. *Id.* 30. Plaintiffs did not challenge this condition. Fola passed two chronic toxicity tests at 001 in Road Fork but then received two failing results. Fola determined that the failing results were based on water inappropriately gathered from its treatment system rather than from the outlet. Tr. 4, p. 4. When the outlet itself was re-sampled it produced two passing scores earlier this year. *Id*. 4-5.

Next, Dr. Menzie examined the influence of ponds themselves on downstream aquatic communities. Tr. 4 pp. 38-73. Peer reviewed literature shows that ponds by themselves can alter downstream aquatic concentrations by shifting the dominant fauna from mayflies to something different. *Id*. 39-42. Likewise, ponds warm the water in the summer and displace upstream areas that provide recruitment for insects in downstream areas like those assessed by Dr. Swan. Tr. 4, pp. 42-45& DEX 62 (Haidekker et al) (temperature) & 47-49 JE 17, p. 787 (EPA recognizing loss of recruitment areas as potential confounder).

Guided by this literature review, Dr. Menzie understood the kind of painstaking site-specific review called for in causal assessments. He and his staff walked every inch of the three watersheds at issue—from the mouth of the streams to their upstream ends. Tr. 4, p. 15. They assessed and carefully documented the effects of habitat modification with habitat assessment forms (Tr. 4, pp. 15-23; DEX 40) and photographs. Tr. 4, pp. 23-31; DEX 104, 105, 189, 190 & 191 (Cogar Hollow photographs); 106, 107 & 192 (Right Fork photographs); and 110 (Road Fork). He compared the habitat effects of the precipitates to unaffected streams in the region. Tr. 4, pp. 33-35 & DEX 112 & 113. He even analyzed the precipitates themselves and demonstrated that the iron and manganese content of the rock coatings in the mined streams was hundreds of times higher than in the unaffected streams. Tr. 4, pp. 32-36 & DEX 112-113.

Dr. Menzie agreed that there are limitations on the objectivity and usefulness of RBP scores to capture meaningful information, especially about the effects of metal hydroxides. Tr. 4, pp. 19-20. Indeed, that fact restricted the ability of EPA to conduct a meaningful confounding factors assessment on the role of habitat. *Id*., p. 17-20; *see* also pp. 77-81 and DEXs 125 & 129 (showing relationship between habitat, conductivity and WVSCI scores.).

Nonetheless, despite the restriction on the usefulness of RBP assessments, they were used by EPA in the Benchmark to assess the role of habitat. As a consequence, Dr. Menzie extracted the "embeddedness" and "sediment" scores from his RBP assessments of the three streams and compared them to the relationship in the WVDEP database between these same habitat measures and WVSCI scores. DEX 114 & 116; Tr. 4. pp. 20-22. Use of the WVDEP database used to create the Benchmark as a predictive tool would predict that Dr. Menzie's embeddedness scores for Cogar Hollow and Road Fork would fail a WVSCI test regardless of conductivity. *Id.*[13] Likewise, using the database in that fashion would predict failing WVSCI scores in all three streams based solely on sedimentation.

Finally, as it relates to hydroxide impacts to habitat, Dr. Menzie responded to cross examination about Fola's remedial efforts in Boardtree Branch, a nearby stream with high conductivity and poor habitat caused by metals deposition, Fola has recently replaced stream substrate and improved instream habitat without treating conductivity. That work concluded just one year ago. Tr. 4, pp. 170-71; PEX 175. While the stream has not yet achieved a passing WVSCI score, WVSCI scores have significantly improved in that short period of habitat improvement while conductivity remained constant—a result that shows the substantial influence of habitat and that undercuts Plaintiffs' claims about the supposed dominant role of conductivity.

Next, Dr. Menzie evaluated the role of temperature in defining insect communities in both the creation of the WVSCI and in the WVDEP database used by EPA to develop the Benchmark. He gleaned several important facts from this review. First, the WVSCI was developed by a contractor using only 67 "reference sites," virtually all of which were so-

[13] Dr. Swan's embeddedness score for Cogar Hollow would also be expected to flunk the WVSCI regardless of conductivity. Tr. 4, pp. 22-23 (Menzie).

called "Level 1" sites. Tr. 4, pp. 51-52. These were among the very coldest of a much larger group of streams WVDEP and Plaintiffs call "reference" streams. *Id*. 52.

Dr. Menzie then examined the temperature preferences of the 163 organisms in the WVDEP database used in EPA's Benchmark. He found, as shown in DEX 123, that the insects used to develop the Benchmark value of 300 µs/cm of conductivity also disappear when median temperature exceed about 17.5ºc in the summer months. Tr. 4, pp. 58-60. That is, the insects presumed to be sensitive to conductivity also disappear in streams that exhibit warmer summertime temperatures. *Id*. 60-61.[14]

To test whether this same phenomenon affected not only the presence or absence of insects in the Benchmark review but also affected WVSCI scores,[15] Dr. Menzie utilized the WVDEP database to examine the relationship between temperature and WVSCI scores. He did so by organizing the temperature data by the summer months. DEX 122; Tr. 4, pp. 61-63. That analysis showed a thermal transition zone between 19 and 21º c. Thus, when median summer temperatures were 21º c or higher, the likelihood of a passing WVSCI score was low regardless of conductivity. DEX 122; Tr. 4, pp. 62, 74.[16]

Next, Dr. Menzie compared the temperature range for waters (of different conductivities) used to develop the WVSCI[17] with the ranges exhibited in the three Leatherwood

[14] Dr. Menzie's exhibit also showed that the median summer temperatures in the three Leatherwood streams greatly exceed the temperatures in which the insects used to devise the Benchmark value are ever found.

[15] The EPA Benchmark only examined the presence or absence of insects and it did not examine WVSCI scores. EPA set the Benchmark value at the conductivity level above which the rarest 5 percent of the insects were not found.

[16] As explained by Dr. Menzie, EPA did not realize the relationship between conductivity and temperature or between effects on insects and temperature because it failed to organize its temperature dates by season. When he examined the date by summer temperature—those temperatures most likely to affect insects—he found that temperature did explain WVSCI scores—a phenomenon EPA simply missed. Tr. 4, pp. 61-68; DEX 122-123.

[17] Dr. Menzie explained that the contractor that developed the WVSCI used only 67 streams from Level 1 references streams from a much larger grouping of Level 1, 2 and 3 reference streams. Tr. 4, pp. 51.52. The temperature in this grouping is lower than in other so-called reference streams. *Id*. 52. Accordingly, when Plaintiffs claim that the

tributaries at issue. DEXs 120 & 121 (Tr. 4, pp. 53-58). The summer temperature of the three Leatherwood streams, by all measures, exceeded by several degrees those of the streams used to develop the WVSCI. Tr. 4, pp. 52-58. And, in fact, the summer temperature in the Leatherwood tributaries exceed the values where one would expect to find either the rare insects used to develop the Benchmark of 300 µs/cm or a passing WVSCI score regardless of conductivity. Tr. 4, pp. 58-62; DEXs 122-123. EPA, which failed to organize and examine the temperature data by season missed this—and thereby missed the fact that temperature and conductivity are correlated and confounded. Tr. 4, pp. 75 and 79-81; DEXs 82 & 127.

Ultimately, Dr. Menzie concluded that the benthic habitat impacts of metal hydroxide deposition in all three streams is the primary cause of reduced WVSCI scores. Tr. 4, pp. 76 & 84-85. Additional reduction in WVSCI scores are likely caused by the presence of ponds and valley fills which not only directly alter the insect communities downstream without regard to water quality but also deprive downstream reaches of "drift" and "recruitment areas." Tr. 4, pp. 82-83. Likewise forest removal and solar warming of the ponds has caused the summertime temperature of the Leatherwood tributaries to exceed, significantly, the ranges in the streams used to compile the WVSCI. As a consequence, one would expect to see—and does see—a reduction in WVSCI scores based solely on temperature. Tr. 4, pp. 83-84.

Dr. Menzie concedes that some component of what comprises conductivity cannot be ruled out as playing some role in shaping the insect community, but he does not consider it a sole or primary contributor to WVSCI scores below 68. Tr. 4, pp. 85, 105. Beyond that, Dr. Menzie concluded that there is insufficient information and analysis available to allocate the relative contribution of stressors. Tr. 4, p. 105.

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temperatures in Leatherwood do not exceed the ranges of temperatures in "reference" streams, they are not using the same temperature data used to create the WVSCI. *See* Pls.' Mem. at 13-14, 24.

III. CONCLUSION

In this case, the pre-mining WVSCI scores in the three streams at issue are set out in Plaintiffs' brief. Pls.' Mem. at 5. They claim that conductivity is the primary driver of reducing those scores below a score of 68. *Id*. And, they dismiss alternative stressors as playing a significant role at all. *Id*. 12-15. Yet, earlier this year, they filed another citizen suit against Fola for discharges into the upper Leatherwood watershed. *See* DEX 202. There, these same Plaintiffs allege that in addition to conductivity, "solar heating of the sediment control ponds upstream of [the] [o]utlets … has discharged … heat which may be a contributing factor to … biological impairment" and has discharged manganese and dissolved solids "that degrade the habitat of downstream waters by causing or material contributing to increased embeddedness of the stream substrate…." *Id.* ¶49.

But, in no case do Plaintiffs attempt to quantify, even generally, the role of "x" microsiemens of conductivity on "y" WVSCI points. In fact, they conducted no real assessment of specific causation and failed to even construct a plausible explanation about the role of Fola's discharges into Right Fork. Without that specific causal analysis, however, the Court cannot determine that conductivity is "having a necessary influence or effect" needed to meet Plaintiffs' burden of proof. *See OVEC, et al. v. Fola Coal Company, LLC*, Civ. Action No. 2:13-5006, Doc. No. 123 at 18 (S.D. W.Va. 2015).

"Materially contribute" must mean more than the simply a contributing factor, lest no weight be given to the word "materially." *See Artz v. Chicago, R.I. & P.R. Co.*, 38 Iowa 293, 296–97 (1874) (highlighting that "material" signals a contribution that is of a higher or greater degree than contributing to "some" degree). The concept of "material contribution" is more nuanced than a dictionary definition of the two words separately. "Material contribution" is meant to illustrate an influence that is a significant, contributing factor in the offending issue.

See, e.g., Clark v. Colvin, No. 4:13CV00711 BSM, 2014 WL 5426633, at *2 (E.D. Ark. Oct. 23, 2014) (holding a person would be ineligible for social security disability if alcohol abuse "materially contributes" to the disability, which would be determined by evaluating whether any or all of the limitations would be disabling once the alcohol abuse was stopped). Here, even if the conductivity were fully treated, it is unclear what the resulting stream score would be given the other factors at issue. This means it is unclear whether conductivity is a factor that "materially contributes" to the degradation of the stream. Accordingly, the Court should rule against Plaintiffs and for Fola.

Respectfully submitted,

FOLA COAL COMPANY, LLC
By Counsel

/s/*Robert G. McLusky*
ROBERT G. McLUSKY, WVBN 2489
M. SHANE HARVEY, WVBN 6604
MATTHEW S. TYREE, WVBN 11160
JENNIFER L. HUGHES, WVBN 9676
JACKSON KELLY PLLC
1600 Laidley Tower
Post Office Box 553
Charleston, West Virginia 25322
Counsel for Fola Coal Company, LLC

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA
CHARLESTON DIVISION

OHIO VALLEY ENVIRONMENTAL COALITION, INC., WEST VIRGINIA HIGHLANDS CONSERVANCY, INC. and SIERRA CLUB,

Plaintiffs,

v. **Case No. 2:13-cv-21588**

FOLA COAL COMPANY, LLC,

Defendant.

CERTIFICATE OF SERVICE

I, Robert G. McLusky, do hereby certify that a true and exact copy of the foregoing FOLA COAL COMPANY'S RESPONSE TO PLAINTIFFS' POST-TRIAL MEMORANDUM was caused to be served upon the following via United States mail, postage pre-paid, this 6th day of July, 2015.

J. Michael Becher
Derek O. Teaney
Joseph M. Lovett
Appalachian Mountain Advocates
P.O. Box 507
Lewisburg, WV 24901

James M. Hecker
Public Justice
1825 K Street, N.W. Suite 200
Washington, DC 20006

/s/*Robert G. McLusky*